Volvo researches car tech to see if you are sleepy

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A sensor that can detect what the driver is looking is part of Volvo Cars' work to develop cars that can recognize if the driver is tired or inattentive. The technology is based on a sensor installed in the dashboard and small LEDs that illuminate the driver with infrared light. The sensor is able to monitor which direction the driver is looking, how open the eyes are, as well as head position and angle. The information can be used to adjust the action of safety systems to the driver's condition and hence improve the driving experience.

(Phys.org) —Volvo Cars announced on Monday its work on a driver

sensor system that can tell if the driver is alert, distracted, or even nodding off. The idea is to provide a safety system, where, on detection, the car can take the appropriate action to make sure the driver is out of serious danger. Volvo's no-time-to-nap alert relies on a sensor that is mounted on the dashboard in front of the driver. Should the driver be monitored as inattentive or drowsy, via the driver's position or eye movements, the car can take action—making sure the car does not stray out of a lane, or get too close to the car in front. Some of the Volvo measures that can participate in the alert system include what is officially called the "Lane Keeping Aid," collision warning with full auto-brake and "Adaptive Cruise Control with Queue Assist." Per Landfors, engineer at Volvo Cars and project leader for driver support functions, said, "This will enable the driver to be able to rely a bit more on their car, and know that it will help them when needed."

Volvo calls its system Driver State Estimation. At the core is the sensor to be placed on the dashboard to monitor a number of things: in which direction is the driver looking? How open are the eyes? What is the head position and angle? Small LEDs illuminate the driver with infrared light, which is monitored by the sensor. The LEDS are invisible to the driver, as the infrared light is outside the wavelengths that the human eye can see.

The technology is part of Volvo's high-tech push for safe driving. According to the Volvo announcement, Driver State Estimation as an analysis of the driver's state in which driver sensors play an important role "is a field that may be key to self-driving cars in the future." The technology is already installed in test vehicles; Volvo Cars is engaged in research with partners, namely the Chalmers University of Technology in Sweden and Volvo AB, to identify methods that are effective for detecting tiredness and inattention.

"The car will need to be able to determine for itself whether the driver is

capable of taking control when the conditions for driving autonomously are no longer present," said the company. "A driver sensor could be of assistance in this."

The technology is one in a line of initiatives by Volvo Cars to meet a 2020 goal "that no one shall be killed or seriously injured in a new Volvo."

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According to the US Centers for Disease Control and Prevention, while

it is obviously clear that falling asleep at the wheel is dangerous, drowsiness has its risks as well in making driver less attentive, slowing reaction time, and affecting one's decision-making ability.

The warning signs of drowsy driving are yawning or blinking frequently, difficulty remembering the past few miles driven, missing the intended exit, drifting from the lane, and hitting a rumble strip. "If you experience any of these warning signs, pull over to rest or change drivers. Simply turning up the radio or opening the window are not effective," said the CDC.

More information: Press release

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